

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claims 1-17 (canceled).

18. (Previously presented): A Carbon-Carbon heat exchanger core comprising a 2-D array of machined fluid passageways extending through the heat exchanger core, the fluid passageways having dimensions between 0.1 millimeters and 1 millimeter.

Claims 19-32 (canceled).

33. (Previously presented) A method of machining the Carbon-Carbon heat exchanger core of claim 18, the method comprising:

5 using at least one electrode to perform electrical discharge machining of the fluid passageways of the heat exchanger core, the electrode made of a material that is mechanically and chemically compatible with the core.

34. (Previously presented) The method of claim 33, wherein an outer surface of the electrode is formed by a carbon-based material.

35. (Previously presented) The method of claim 33, wherein the electrode is made of a material selected from a group consisting of carbide, graphite, carbon and tungsten.

36. (Previously presented) The method of claim 33, wherein at least one electrode is scanned across the heat exchanger core to machine the fluid passageways.

37. (Previously presented) The method of claim 33, wherein arrays of the electrodes are used to machine the fluid passageways.

38. (Previously presented) The method of claim 33, wherein the electrode has a shape of a portion to be removed from the work piece.

39. (Previously presented) The method of claim 33, further comprising causing local surface oxidation of the heat exchanger core during machining.

40. (Previously presented) The method of claim 39, wherein the local oxidation is caused by supplying an oxidizing dielectric to the heat exchanger core.

41. (Previously presented) The method of claim 39, wherein the electrode is used to direct a dielectric onto the heat exchanger core to cause the local surface oxidation.

42. (New): A work-piece, comprising: a carbon-carbon composite material having machined features formed therein,

wherein the work-piece comprises a heat exchanger core,

wherein the machined features have dimensions between 0.1  
5 millimeters and 1 millimeter, and

wherein the machined features are formed by electrical discharge from at least one electrode to effect vaporization removal of a portion of the carbon-carbon composite material from the work-piece.

43. (New) The work-piece of claim 42, wherein the machined features have the shape of a negative replica of the at least one electrode.

44. (New) The work-piece of claim 42, wherein:  
the work-piece includes carbon deposited from pyrolysis of a dielectric fluid,

5 the carbon is deposited within the machined features, and  
the dielectric fluid is delivered to the machined features via the at least one electrode.

45. (New) The work-piece of claim 44, wherein the dielectric fluid comprises a hydrocarbon.